

Attorney Docket No. CSC-023443-US

Claims:

1. (Original) A process for manufacturing a lightweight, high bulk coated paper, comprising the steps of:
 - (a) creating a fiber furnish comprising mechanical pulp and chemical pulp;
 - (b) forming a paper web from the fiber furnish;
 - (c) removing water from said web;
 - (d) applying a coating having a weight of at least 2.0 pounds per 3300 square feet per side onto each surface of said web to form a coated web having a moisture content greater than 5.5%, and a caliper greater than 2.6 mils;
 - (e) passing the coated web through two extended-nip calenders, with each side of the paper facing a heated roll and treated with one of said calender nips, and wherein each calendering nip is formed by a calender roll having a surface temperature of at least 300° F and a backing shoe having a width of at least 30 mm, the nip providing loading of at least 1000 pounds per linear inch; and whereby the calendered paper has a caliper preservation greater than 75%.
2. (Original) A process as in Claim 1 wherein said paper is No. 5 offset lightweight coated paper.
3. (Original) A process as in Claim 1 wherein said furnish comprises at least 40% mechanical pulp.
4. (Original) A process as in Claim 3 wherein said furnish comprises about 60 to 80% mechanical pulp.
5. (Original) A process as in Claim 1 wherein said coating has a weight of 2.0 to 6.0 pounds per 3300 square feet per side.
6. (Original) A process as in Claim 1 wherein said coated web has a moisture content greater than 6.5%.
7. (Original) A process as in Claim 1 wherein said coated web has a moisture content greater than 7.0%.
8. (Original) A process as in Claim 1 wherein said coating comprises a hollow plastic pigment; a kaolin pigment; a calcined kaolin clay; a titanium dioxide pigment; a

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synthetic latex binder; and a synthetic thickener, or a co-binder including carboxymethylcellulose or acrylic acid based or associative based thickeners.

9. (Original) A process in Claim 8 wherein said coating also comprises precipitated calcium carbonate or ground calcium carbonate.

10. (Original) A process as in Claim 8 wherein said hollow plastic pigment is present in an amount of at least about 2% by weight of the total amount of pigment.

11. (Original) A process as in Claim 8, wherein said hollow plastic pigment is present in an amount of about 3 to 5% by weight of the total amount of pigment.

12. (Original) A process as in Claim 8 wherein said kaolin pigment has a fine particle size distribution characterized in that at least 85% of said particles are less than 2 microns and at least 50% of said particles are less than 0.5 microns, based upon particle counting using a Sedigraph particle size analyzer.

13. (Original) A process as in Claim 8 wherein said kaolin pigment has a platy morphology characterized as both fine and coarse particles having a shape factor greater than 15.

14. (Original) A process as in Claim 8 wherein said kaolin pigment has a platy morphology characterized as both fine and coarse particles having a shape factor of about 20 to 27.

15. (Original) A process as in Claim 8 wherein said kaolin pigment is present in an amount of at least 70% by weight of the total amount of pigment.

16. (Original) A process as in Claim 8 wherein said kaolin pigment is present in an amount of 80% to 100% by weight of the total amount of pigment.

17. (Original) A process as in Claim 8 wherein said titanium dioxide is present in an amount of at least about 2%.

18. (Original) A process as in Claim 12 wherein said titanium dioxide is present in an amount of about 3 to 5%.

19. (Original) A process as in Claim 1 wherein the coating is preferably applied using a blade coater or a metering size press.

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20. (Original) A process as Claim 1 wherein the calender is a shoe nip calender, said shoe nip width being in the range of from about 40 mm to about 80 mm, and calendering temperature is at least 300° F, and nip loading at 1700-2400 pli.

21. (Original) A process as in Claim 1 wherein said calendered paper has a basis weight of 28 to 38 pounds per 3300 square feet and exhibits a 75 degree TAPPI gloss of 35% or above and a caliper of at least 2.15 mils.

22. (Original) A process for manufacturing a super high bulk, offset lightweight coated paper, comprising

- (a) creating a fiber furnish comprising at least 40% mechanical pulp;
- (b) forming a paper web from the fiber furnish;
- (c) removing water from said web;
- (d) applying a coating using a blade coater at coat weights of at least 2.0 pounds per 300 square feet, per side onto each surface of said web to form a coated web having a moisture content of at least 5.5%; and
- (e) passing the coated web through two extended-nip calenders, with each side of paper facing a heated roll and treated with one of said calender nips; whereby each calendering nip is formed by a calender roll having a surface temperature of at least 300° F and a backing shoe nip having a width of at least 30 mm, the nip providing loading of at least 1000 pounds per linear inch (pli), and whereby the calendered paper has a caliper preservation greater than 75%,

wherein the coating comprises:

- (i) hollow plastic pigment, in an amount of at least about 2% by weight of the total amount of pigment;
- (ii) kaolin pigment in an amount of at least about 70% by weight of the total amount of pigment, said kaolin pigment having a fine particle size distribution characterized by at least 85% of said particles are less than 2 microns and at least 50% of said particles are less than 0.5 microns, and a platy morphology characterized as both fine and coarse particles having a shape factor greater than 15, preferably 20-27;
- (iii) titanium dioxide in an amount of at least about 2% by weight of the total amount of pigment;
- (iv) calcined kaolin in an amount of at least 5% by weight of the total amount of pigment;
- (v) synthetic latex in a concentration of at least about 12 or more parts by weight of the total amount of pigment;
- (vi) synthetic thickener in a concentration of at least about 0.05 or more parts by weight of the total amount of pigment; and

wherein the finished coated paper has a basis weight of 28 to 38 pounds per 33 square feet, exhibits a 75° TAPPI gloss of 35% or above, has a caliper of at least 2.15 mils, gives a 17-27% higher caliper, has up to 22% bulk improvement relative to a supercalendered 30 pounds/3300 square feet LWC, and has improved brightness, opacity and printing gloss.

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23. (New) A coated paper sheet comprising:
a base paper formed from a fiber furnish wherein the fiber furnish comprising a mixture of mechanical pulp and chemical pulp; and
a coating having a weight of at least 2.0 pounds per 3300 square feet per side onto each surface of the base paper, the coating comprising
one or more pigments or clays and one or more binders, at least one of the pigments is a platy kaolin pigment.

24. (New) A lightweight, high bulk coated paper coated paper made by a process of Claim 1.